

PATENT ABSTRACTS OF JAPAN

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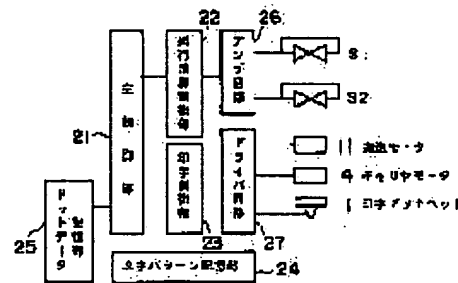
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(54) PRINTER

(57)Abstract:

PURPOSE: To reduce oblique printing by measuring the obliquely-fed quantity of the sheets of media to be conveyed, and moving a print character in an oblique direction.

CONSTITUTION: A printer comprises an oblique feed calculation controller 22 for calculating the obliquely-fed quantity of print sheets 10 by first and second detecting elements S1, S2 disposed at a predetermined interval in a direction perpendicular to a conveying direction on a conveying passage for conveying the sheets 10, and corrects printing according to the quantity. Thus, the printer also comprises a print dot head 1 having a plurality of dots, a character pattern memory 24 of a first memory for storing dot data, a dot data memory 25 of a second memory for temporarily storing print data to be printed for every printing line, print control means 23 for the dot data, and a main controller 21 for so controlling that the data of the memory 25 is moved and developed according to the quantity and output to the means 23.



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CLAIMS

[Claim(s)]

[Claim 1] The 1st and the 2nd detection means of preparing predetermined spacing in the direction which intersects perpendicularly with the conveyance way which conveys a print form with two or more conveyance rollers, and this conveyance way to the conveyance direction, being arranged in it, and outputting a detecting signal by passage of a print form, In the printer which performs printing amendment from a gap of the detection time of the 1st and 2nd detection means with said amount of skews to a means to calculate the amount of skews of a print form, and the print form conveyed to the printing section with said conveyance roller this -
- The printing dot beef fat constituted by two or more dots (prime spot) and the 1st storage section which made the dot data which are all the character patterns printed memorize, The 2nd storage section which memorizes temporarily the dot data which should be printed for every printed line, The printer characterized by having the printing control means which receives said dot data and carries out drive control of the printing dot head, and having the control means controlled to carry out migration expansion of the dot data of said 2nd storage section with said amount of skews, and to output to a printing control means.

[Claim 2] Migration expansion of said dot data based on said control means is a printer according to claim 1 characterized by being controlled to move to the upper and lower sides and a longitudinal direction, and to print the dot data which were divided into two or more printing blocks in the dot data for every printed line, and were given to the character pattern for this every printing block.

[Claim 3] Migration expansion of said dot data based on said control means is a printer according to claim 1 characterized by being controlled to move to the upper and lower sides and a longitudinal direction, and to print the dot data which were divided for two or more printable item columns of every in the dot data for every printed line, and were given to the character pattern for this every printable item column.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention carries out the pinching pressure welding of the print form with two or more sets of conveyance rollers, by rotating, conveys a medium to the printing section and relates to the printer which performs printing processing.

[0002]

[Description of the Prior Art] Conventionally, in the printer, the document which let out the document and cut-form (it considers as a document henceforth) which were beforehand stored in the stowage, or was inserted by the operator is conveyed to the printing section, and the print head is performing required printing processing. In such a printer, generally the pinching pressure welding of the document is carried out in the periphery section of two or more sets of conveyance rollers, by rotating said conveyance roller, convey a document, it is made to stop with the rotation beforehand defined by the sensor formed near the printing section after detecting the tip (reference edge) of a document, and printing processing is carried out. With such a conveyance means, the skew of the document was further carried out with insertion, the slanting set at the time of storing, etc., it was conveyed, and there were change by it being engaged one by one and conveying two or more conveyance rollers, the manufacture error of the dimension of a conveyance roller, and the environmental condition and fault that printing will become slanting. What builds the whole printing unit on a rotary table, and rotates according to a skew is indicated by JP,4-35968,A as a policy for solving to the above fault, and when a skew occurs in JP,4-282273,A, there are some which correct a printing location by carrying out very small migration (rotation) of the right end section to order by making the left end section of a printing unit into the center of rotation.

[0003]

[Problem(s) to be Solved by the Invention] However, in the printer of the above-mentioned configuration, there was also a problem said that equipment is enlarged in constituting from various mechanism elements and saying the increment in a member, in order to need a driving source special to rotation of a printing unit and also to make it rotate. Furthermore, although skew printing is canceled in a printing result, a printing starting position must be shifted also in the **** direction for every line feed, and there is a problem that control is not easy. furthermore, by other approaches indicated by JP,4-282273,A A transfer control to perform line feed actuation of a slight amount for every block at the time of printing, and for line feed actuation of a slight amount serve as the line feed direction of the previous line to hard flow at the time of hard flow printing, In order to carry out an interruption halt of the printing temporarily at the time of conveyance, after a print head overruns by the numeric character, stops and backs at the time of printing re-initiation, it may become complicated printing control of starting printing actuation, and also it has become the increment in the processing time by these. When performing printing processing to the document conveyed by carrying out a skew in view of the above-mentioned trouble, this invention obtains a dot configuration wide range than the character pattern which constitutes a printing character, and printing control aims at offering small equipment with few configuration members easily in it by controlling to shift printing (prime

spot configuration) in the direction in every direction.

[0004]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, this invention prepares predetermined spacing in the direction which intersects perpendicularly with the conveyance way which conveys a print form with two or more conveyance rollers, and this conveyance way to the conveyance direction, and is arranged in it. The 1st and the 2nd detection means of outputting a detecting signal by passage of a print form, In the printer which performs printing amendment from a gap of the detection time of the 1st and 2nd detection means with said amount of skews to a means to calculate the amount of skews of a print form, and the print form conveyed to the printing section with said conveyance roller this -- The printing dot beef fat constituted by two or more dots (prime spot) and the 1st storage section which memorizes the dot data which are all the character patterns printed, The 2nd storage section which memorizes temporarily the dot data which should be printed for every printed line, It has the printing control means which receives dot data and carries out drive control of the printing dot head. The dot data memorized by the 2nd storage section with the amount of skews are divided into two or more printing blocks, and it is made the configuration controlled to move vertically and horizontally and to print dot data for this every printing block.

[0005]

[Function] The printer which does not have a printing gap as a printing result can be offered by controlling to shift and print dot data in the direction of a skew for every printing block by the above configuration. In addition, either a top or the bottom and the left or the right is possible for the direction to shift by the direction of a skew.

[0006]

[Example] According to a drawing, the example of this invention is explained below. Drawing 1 is the control-block Fig. of the example of this invention, drawing 2 is the top view of the printer in the example of this invention, drawing 3 is the expansion explanatory view showing the character pattern in the example of this invention, and drawing 4 is the explanatory view showing an example of the amendment printing result of the example of this invention. In addition, the same sign is given to the element common to each drawing.

[0007] In drawing 2, 1 is a print head, is attached in the print head carrier 2, and is supported movable in the direction of a printing digit with the carrier guide 3. 4 is a carrier motor and rotation actuation is changed into migration actuation of the print head carrier 2 by motorized-pulley 4a and the belt 5 grade which fixed on this carrier motor 4 shaft. 6 is a frame and supports said carrier guide 3 and carrier motor 4. By the platen, 7 counters with said print head 1, and is prepared. 8 is a conveyance roller, and a part of peripheral face is projected and prepared in the conveyance way 9, and a pinching pressure welding is constituted possible in a document 10, and it performs document conveyance by the forward inverse rotation of the conveyance motor 11. It is arranged so that an optical axis may pass in the direction which is a photo sensor and intersects perpendicularly to said conveyance way 9, and S1 and S2 are constant-rate detached building ***** to the document cross direction mutually. In addition, the conveyance roller 8 illustrates only one piece and is omitting others.

[0008] Drawing 1 is the control-block Fig. of this invention, 21 is the main control section which controls the important section of this invention, and the skew operation control section 22, the printing control section 23, the character-pattern storage section 24, and the dot-data storage section 25 are connected. The skew operation control section 22 carries out counting of each ON signal generation timing of the photo sensors S1 and S2 amplified by the amplifier circuit 26, and calculates the amount of skews. The printing control section 23 outputs the dot data of the alphabetic character which should be printed with directions [section / 21 / main control] to a driver circuit 27. A driver circuit 27 performs the drive of the carrier motor 4, the conveyance motor 11, and also a print head 1. In addition, although the driving source for the pinching pressure weldings of the conveyance roller 8 etc. was required, it omitted.

[0009] The main control section 21 calculates the movement magnitude and the number of migration alphabetic characters to the direction of four directions of dot data according to the amount of skews, and outputs them to the printing control section 23 while it controls the above

each part. The character-pattern storage section 24 memorizes the dot configuration of all the alphabetic characters that should be printed as the 1st storage section, generally, the printing data storage section 25 memorizes the printing data for every printed line temporarily as the 2nd storage section, and each writes it in and it is memorized by ROM (read-only memory) at RAM (random access memory).

[0010] Drawing 3 is the expansion explanatory view showing the printing pattern in the example of this invention, and it moves to the left in the **** direction after line feed at 1 dot while moving to the bottom the whole dot which consists of 24 dots by [maximum] 15 dots, and constitutes an alphabetic character "3" for every character. In addition, by this example, a graphic size is constituted from 20 dots by 9 dots, and an upper left dot (prime spot) is explained as a reference point P. Next, an operation with the above-mentioned configuration is explained.

[0011] Although a document 10 will be conveyed in the direction of arrow-head A with the conveyance roller 8 and a photo sensor S1 and the S2 section will be passed, if the skew has occurred, it will become what the time amount which said photo sensors S1 and S2 turn on shifts (Y1-Y2). If this time amount of gaps constitutes the conveyance motor 11 from a stepping motor, since a rotation will be transposed to the number of steps, if the number of steps is multiplied by the amount of conveyances per unit step, the amount of skews can grasp easily. a photo sensor S1 — said — since the distance of the cross direction of S2 is fixed, the skew angle theta as shown in drawing 7 can be calculated, and if printing control is identically [to this skew angle theta] printable slanting, slanting printing will be canceled as a printing result. In this invention, removal correction of the reference point P of a character pattern is carried out, and it is printed so that it may become the oblique side of the trigonometric function which made the number of printing characters the base and made the amount of skews height. In the example shown in drawing 2, since the lower right serves as [a printing result] **, removal correction is controlled to become an upward slant to the right. As shown in drawing 4, by this example, the printing character of 1 end of a road first, by the main control section 21 It is divided into 5 blocks, move a reference point P by 2 dots below about the first block, and printing is started from a left end figure "0." If it prints to "5", the removal correction of the reference point P of a character pattern is turned up by 1 dot, and it prints from "6" to "B", and next, the removal correction of the reference point P of a character pattern will be turned up by 2 dots, it will print it from "C" to "H", will repeat this removal correction, and will end printing of all one lines. If all the 1st-line printing is completed, it will convey to the location where the conveyance motor 11 is rotated by one line feed, and degree printed line and print head 1 of a document 10 correspond. As it is, as an origin/datum P of left end alphabet "Q", a criteria location is moved and the 2nd-line printing prints the origin/datum migration location of the 1st line so that it may be in agreement with the migration assistant normal position of the origin/datum P for every 1st-line block. Henceforth, all lines are printed repeatedly similarly.

[0012] In addition, in the example of a character pattern shown in drawing 1, the removal correction of the reference point P is turned by 1 dot up, and it can amend in the 2nd line in a left, and the removal correction, i.e., **** direction, of [for 1 dot]. Furthermore, as shown in drawing 6 depending on that the lower left carries out removal correction to ***** to say nothing of being made not to carry out printing processing as shown in drawing 5 depending on the direction of a skew when there are more amounts of skews than a constant rate, and the amount of skews, a reference point P is amended in the direction of an upward slant to the right. Furthermore, slight amount increase and decrease can be carried out, and the amount of line feed can also be amended. Since format printing is beforehand made by the common document, by carrying out block division of the dot data which should be printed for every item (within the limit [assignment]) column, in a printing result, a printing gap cannot be conspicuous and can also carry out.

[0013]

[Effect of the Invention] As explained above, this invention prepares predetermined spacing in the direction which intersects perpendicularly with the conveyance way which conveys a print form with two or more conveyance rollers, and this conveyance way to the conveyance direction, and is arranged in it. The 1st and the 2nd detection means of outputting a detecting

signal by passage of a print form, In the printer which performs printing amendment from a gap of the detection time of the 1st and 2nd detection means with said amount of skews to a means to calculate the amount of skews of a print form, and the print form conveyed to the printing section with said conveyance roller this -- The printing dot beef fat constituted by two or more dots (prime spot) and the 1st storage section which memorizes the dot data which are all the character patterns printed, The 2nd storage section which memorizes temporarily the dot data which should be printed for every printed line, It has the printing control means which carries out drive control of the printing dot head in response to dot data. The dot data memorized by the 2nd storage section with the amount of skews are divided into two or more printing character blocks, and since it controls to move vertically and horizontally and to print dot data for this every printing block, the printing result in which slanting printing is not conspicuous is obtained. [0014] Since it becomes unnecessary in this invention to constitute from special driving sources and various mechanism elements, such as rotation of a printing unit, the increment in a member and enlargement of equipment can be prevented. Furthermore, it does not become with the increment in the processing time except that line-feed actuation of a slight amount performs for every block at the time of printing, a transfer control for line-feed actuation of a slight amount to carry out to the line-feed direction of the previous line to hard flow at the time of hard-flow printing and complicated printing control of entering to printing actuation after overrunning by the numeric character for carrying out an interruption halt in printing temporarily and backing at the time of the re-printing initiation by halt become that it is unnecessary and control becomes simple.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the control-block Fig. of the example of this invention.

[Drawing 2] It is the top view of the printer in the example of this invention.

[Drawing 3] It is the expansion explanatory view showing the character pattern in the example of this invention.

[Drawing 4] It is the explanatory view showing an example of the amendment printing result of the example of this invention.

[Drawing 5] It is the expansion explanatory view showing the concept of the 1 printing result of the example of this invention.

[Drawing 6] It is the expansion explanatory view showing the concept of the 1 printing result of the example of this invention.

[Drawing 7] It is the explanatory view of the document in which a skew printing result is shown.

[Description of Notations]

1 Print Head

2 Print Head Carrier

3 Carrier Guide

4 Carrier Motor

8 Conveyance Roller

10 Document

11 Conveyance Motor

21 Main Control Section

22 Skew Operation Control Section

23 Printing Control Section

24 Character-Pattern Storage Section

25 Printing Data Storage Section

P Reference point

S1, S2 Photo sensor

[Translation done.]

(11)特許出願公開番号

(43)公開日 平成7年(1995)12月19日

B41J 3/10 101 J
審査請求 未請求 請求項の数3 OL (全5頁)

本発明の実施例の制御ブロック図

【特許請求の範囲】

【請求項1】 印字用紙を複数の搬送ローラにより搬送する搬送路と該搬送路に搬送方向に対して直交する方向に所定間隔を設けて配設され、印字用紙の通過により検出信号を出力する第1及び第2の検出手段と、該第1及び第2の検出手段の検出時間のずれより、印字用紙の斜行量を演算する手段と、前記搬送ローラにより印字部まで搬送された印字用紙に対して、前記斜行量により印字補正を行なう印字装置において、

複数のドット（素点）により構成される印字ドットヘッドと、

印字される全ての文字パターンであるドットデータを記憶させた第1の記憶部と、

印字行毎に印字すべきドットデータを一時的に記憶する第2の記憶部と、

前記ドットデータを受信し印字ドットヘッドを駆動制御する印字制御手段とを有し、

前記斜行量により前記第2の記憶部のドットデータを移動展開させて印字制御手段に出力するように制御する制御手段を有することを特徴とする印字装置。

【請求項2】 前記制御手段による前記ドットデータの移動展開は印字行毎のドットデータを複数の印字ブロックに分割され、該印字ブロック毎に文字パターンに付与されたドットデータを上下及び左右方向に移動して印字するよう制御されることを特徴とする請求項1記載の印字装置。

【請求項3】 前記制御手段による前記ドットデータの移動展開は印字行毎のドットデータを複数の印字項目欄毎に分割され、該印字項目欄毎に文字パターンに付与されたドットデータを上下及び左右方向に移動して印字するよう制御されることを特徴とする請求項1記載の印字装置。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、複数組の搬送ローラにより印字用紙を挾持圧接し、回転することにより媒体を印字部まで搬送し、印字処理を行なう印字装置に関する。

【0002】

【従来の技術】従来より、印字装置では予め収納部に格納された帳票や伝票（以後、帳票とする）を繰り出し、又は操作者により挿入された帳票を印字部まで搬送して、印字ヘッドにより必要な印字処理を行なっている。このような印字装置では一般的に複数組の搬送ローラの外周部で帳票を挾持圧接し、前記搬送ローラを回転させることにより帳票を搬送し、印字部近傍に設けられるセンサにより帳票の先端（基準端）を検出後に予め定められた回転量で停止させ、印字処理されている。このような搬送手段では複数の搬送ローラを順次、係合して搬送されることがや搬送ローラの外形寸法の製造誤差、環境条

件による変化、更には挿入や格納時の斜めセット等により帳票は斜行して搬送され、印字が斜めになってしまうという不具合があった。以上の不具合に対し、解決するための方策として、特開平4-35968号公報には印字ユニット全体を回転テーブル上に構築し斜行に応じて回転するものが開示されており、特開平4-282273号公報には斜行が発生した場合には印字ユニットの左端部を回転中心として右端部を前後に微少移動（回転）させることにより印字位置を修正するものがある。

【0003】

【発明が解決しようとする課題】しかしながら上記構成の印字装置では、印字ユニットの回転には特別な駆動源を必要とするほか回転させるためには種々の機構部品で構成することになり部材の増加は言うにおよばず、装置が大型化になると言う問題もあった。更に、印字結果においては斜行印字は解消されるが、改行毎に改行方向にも印字開始位置をずらさなければならず、制御が容易ではないという問題がある。更に特開平4-282273号に開示された他の方法では、印字時に各ブロック毎に微少量の改行動作を行ない、逆方向印字時には微少量の改行動作は前行の改行方向とは逆方向になるための搬送制御や、搬送時に印字を一時中断停止するため印字ヘッドが数文字分オーバーランして停止してしまい、印字再開時にはバックしてから印字動作に入るという複雑な印字制御となる場合があるほか、これらにより処理時間の増加にもなっている。本発明は、上記の問題点に鑑み、斜行し搬送された帳票に対して印字処理を行なう場合において、印字文字を構成する文字パターンより広範囲のドット構成を得て、印字（素点構成）を縦横方向にずらすように制御することにより印字制御が容易で、且つ、構成部材の少ない小型の装置を提供することを目的とする。

【0004】

【課題を解決するための手段】上記課題を解決するために本発明は、印字用紙を複数の搬送ローラにより搬送する搬送路と該搬送路に搬送方向に対して直交する方向に所定間隔を設けて配設され、印字用紙の通過により検出信号を出力する第1及び第2の検出手段と、該第1及び第2の検出手段の検出時間のずれより、印字用紙の斜行量を演算する手段と、前記搬送ローラにより印字部まで搬送される印字用紙に対して、前記斜行量により印字補正を行なう印字装置において、複数のドット（素点）により構成される印字ドットヘッドと、印字される全ての文字パターンであるドットデータを記憶しておく第1の記憶部と、印字行毎に印字すべきドットデータを一時的に記憶する第2の記憶部と、ドットデータを受信し印字ドットヘッドを駆動制御する印字制御手段とを有し、斜行量により第2の記憶部に記憶されているドットデータを複数の印字ブロックに分割し、該印字ブロック毎にドットデータを上下左右に移動して印字するよう制御する

構成にしたものである。

【0005】

【作用】以上の構成により、印字ブロック毎にドットデータを斜行方向にずらして印字するよう制御することにより、印字結果として印字ずれのない印字装置を提供できる。なお、ずらす方向は斜行方向により上又は下及び左又は右のいずれでも可能である。

【0006】

【実施例】以下図面に従って、本発明の実施例について説明する。図1は本発明の実施例の制御ブロック図であり、図2は本発明の実施例における印字装置の平面図であり、図3は本発明の実施例における文字パターンを示す拡大説明図であり、図4は本発明の実施例の補正印字結果の一例を示す説明図である。なお各図面に共通する要素には同一の符号を付す。

【0007】図2において1は印字ヘッドであり印字ヘッドキャリア2に取り付けられて、キャリアガイド3により印字桁方向に移動可能に支持されている。4はキャリアモータであり、該キャリアモータ4軸に固着されたモータプーリ4aおよびベルト5等により回転動作が印字ヘッドキャリア2の移動動作に変換されている。6はフレームであり前記キャリアガイド3やキャリアモータ4を支持するものである。7はプラテンで前記印字ヘッド1と対向して設けられている。8は搬送ローラであり、搬送路9に外周面の一部が突出して設けられ、帳票10を挟持圧接が可能に構成され、且つ、搬送モータ11の正逆回転により、帳票搬送を行なう。S1及びS2は光学センサであり前記搬送路9に対して直交する方向に光軸が通過するよう配設されていて、互いに帳票幅方向に一定量離れている。なお、搬送ローラ8は1つのみを図示し、他を省略している。

【0008】図1は本発明の制御ブロック図であり、21は本発明の要部を制御する主制御部であり、斜行演算制御部22、印字制御部23、文字パターン記憶部24、ドットデータ記憶部25が接続されている。斜行演算制御部22はアンプ回路26により増幅された光学センサS1及びS2の各々のオン信号発生タイミングを計数し斜行量を演算するものである。印字制御部23は主制御部21よりの指示により印字すべき文字のドットデータをドライバ回路27に出力するものである。ドライバ回路27はキャリアモータ4や搬送モータ11更に印字ヘッド1の駆動を行なうものである。なお、搬送ローラ8の挟持圧接用の駆動源なども必要であるが省略した。

【0009】主制御部21は以上の各部を制御すると共に、斜行量に応じてドットデータの上下左右方向への移動量と、移動文字数を演算して印字制御部23に出力する。文字パターン記憶部24は第1の記憶部として印字すべき文字全てのドット構成を記憶しておくもので一般的にはROM（リード・オンリー・メモリー）に、印字

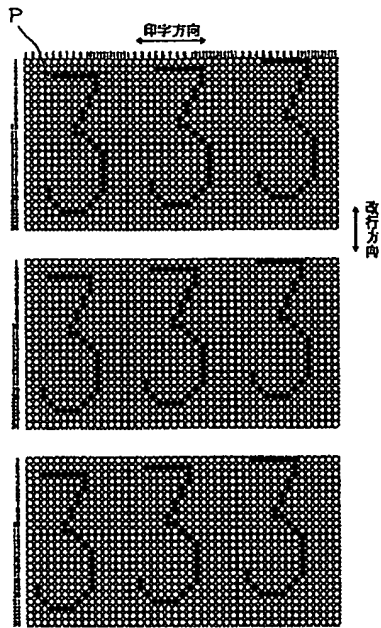
データ記憶部25は第2の記憶部として印字行毎の印字データを一時的に記憶するものでRAM（ランダム・アクセス・メモリー）にそれぞれが書き込み記憶されている。

【0010】図3は本発明の実施例における印字パターンを示す拡大説明図であり、最大縦24ドット×横15ドットで構成されるものであり、1文字毎に文字「3」を構成するドット全体を上側に移動させるとともに、改行後の改行方向においては左に1ドット分に移動したものである。なお、本例では文字の大きさを縦20ドット×横9ドットで構成し左上のドット（素点）を基準点Pとして説明する。次に上記構成での作用について説明する。

【0011】帳票10を搬送ローラ8により矢印A方向に搬送して光学センサS1及びS2部を通過することになるが、斜行が発生していると前記光学センサS1及びS2がオンする時間がずれる（Y1-Y2）ことになる。この時間的なずれ量は搬送モータ11をステッピングモータで構成すれば、回転量はステップ数に置き換えられることからステップ数に単位ステップ当たりの搬送量に乗じれば、斜行量が容易に把握できることになる。光学センサS1と同S2の幅方向の距離は一定であるため図7に示すような斜行角 θ が演算できることになり、印字制御はこの斜行角 θ と同一に斜め印字が可能であれば、印字結果として斜め印字は解消される。本発明では、印字文字数を底辺とし、斜行量を高さとした三角関数の斜辺となるように文字パターンの基準点Pを移動補正して印字する。図2に示す例においては、印字結果が右下がりとなるため、移動補正は右上がりになるように制御される。まず、図4に示すように1行当たりの印字文字を本例では主制御部21により、5ブロックに分割され最初のブロックについては基準点Pを下方へ2ドット分移動して左端の数字「0」から印字を開始し、「5」まで印字したら、1ドット分文字パターンの基準点Pを上側に移動補正して「6」から「B」まで印字し、次は2ドット分文字パターンの基準点Pを上側に移動補正して「C」から「H」まで印字し、この移動補正を繰り返して1行全ての印字を終了する。第1行目の全印字が終了したら1改行分搬送モータ11を回転させて帳票10の次印字行と印字ヘッド1が対応する位置まで搬送する。第2行目の印字は第1行目の基準点移動位置をそのまま左端の英字「Q」の基準点Pとして、第1行目の各ブロック毎の基準点Pの移動補正位置と一致するように基準位置を移動して印字する。以降、同様に繰り返して全行の印字を行なう。

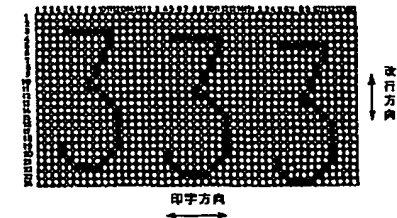
【0012】なお、図1に示す文字パターン例では、基準点Pを上1ドット分移動補正しており第2行目では左方にも1ドット分の移動補正、すなわち改行方向にも補正が可能である。更に、斜行量が一定量より多い場合には印字処理をしないようにすることは言うまでもな

【図3】



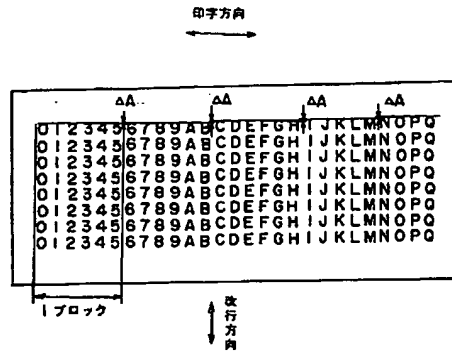
本発明の実施例における文字パターンを示す説明図

【図5】



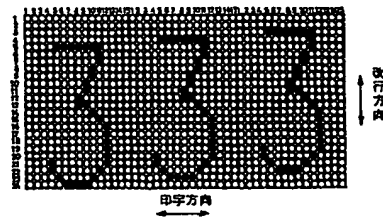
本発明の実施例の一印字結果の概念を示す拡大説明図

【図4】



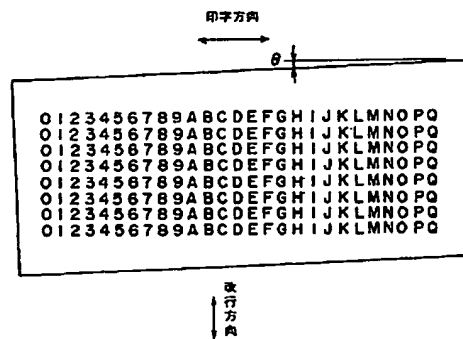
本発明の実施例の補正印字結果の一例を示す説明図

【図6】



本発明の実施例の一印字結果の概念を示す拡大説明図

【図7】



斜行印字結果を示す変型の説明図